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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/749,662	12/31/2003	Pirjo Pasanen	037145-0501	9738

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EXAMINER	
FILE, ERIN M	
ART UNIT	PAPER NUMBER
2611	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/749,662	PASANEN ET AL.	
	Examiner	Art Unit	
	Erin M. File	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 12-24* is/are rejected.

7)☒ Claim(s) *11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 December 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/2/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(b) because they are incomplete. 37 CFR 1.83(b) reads as follows:

> When the invention consists of an improvement on an old machine the drawing must when possible exhibit, in one or more views, the improved portion itself, disconnected from the old structure, and also in another view, so much only of the old structure as will suffice to show the connection of the invention therewith.

2. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The method of claims 1-11 is not adequately illustrated by the drawings.

4. The drawings fail to illustrate the multiplexing as described in claims 2 and 9.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-3, 6, 9, 12, and 14-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Fujiwara et al. (U.S. Pub. No. 2003/0165127).

Claims 1, 12, Fujiwara discloses:

- communicating between a relay station and a base station using a first radio interface (source station is equivalent to base station, see fig. 1, source station 1 to relay station 2A, [0010], lines 3-4, [0043], lines 5-7);
- communicating between user equipment and the relay station using a second radio interface (destination station is equivalent to user equipment, see fig. 5, relay station 2A to destination station 3, [0048], lines 4-6);
- processing the communication between the relay station and the base station with the first radio interface separately from the communication between user equipment and the relay station (the separate communications inherently suggests the separate processing of these separate paths).

Claim 2, Fujiwara further discloses multiplexing communication between the relay station and the base station and between the relay station and at least one other relay station to create multiple simultaneous data streams (see fig 5, multiple communication links exist between the relay stations 2A, 2B, and 2C and between the relay stations and the destination station).

Claim 3, Fujiwara further discloses relay station is not directly connected to the base station but is connected to the base station through at least two different relay stations (see fig. 5, communications received at 2A from source station 1 is sent to 2B and on to 2C).

Claim 6, Fujiwara further discloses communicating between user equipment and the relay station comprises communicating a relay station specific pilot signal ([0033], see fig. 8B which shows an example of a relay station specific pilot signal).

Claim 9, Fujiwara further discloses the first radio interface comprise a macroscopic multiplexing where the relay station is connected to the base station directly and also via at least one other relay station (see fig. 5 and fig. 1 combined, relay station 2C connects to destination station and also to relay station 2C).

Claim 14, Fujiwara further discloses at least one other relay station being configured to communicate with the relay station and the base station (see fig. 5 relay stations 2A, 2B, and 2C and between the relay stations and the destination station).

Claim 15, Fujiwara further discloses the relay station communicates with the base station directly and simultaneously via the at least one other relay station (see fig. 5 relay stations 2A, 2B, and 2C and between the relay stations and the destination

station).

Claim 16, Fujiwara further discloses the relay station is not directly connected to the base station but is connected to the base station through at least one different relay station (see fig. 5, communications received at 2A from source station 1 is sent to 2B and on to 2C).

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 17, 18, 22, and 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Naden et al. (U.S. Patent No. 7,184,703).

Claims 17, 22, Naden discloses:

- a radio interface that communicates with relay stations in a multi-hop communication environment (abtract, lines 1-6);
- a processor coupled to the radio interface, the processor providing commands for multiple input, multiple output communication via the radio interface when high data rates are needed (col. 16, lines 24-26).

Claims 18, 23, Naden further discloses the multiple input multiple output as disclosed by Naden inherently includes multiple antennas (col. 16, lines 24-26).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claim 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara et al. (U.S. Pub. No. 2003/0165127) as applied to claim 1 above, and further in view of Ebata et al. (U.S. Pub. No. 2002/0173310).

Claim 4, Fujiwara fails to disclose communicating between the relay station and multiple base stations, however, Ebata discloses a configuration where a relay station (fig. 8, 12) is connected to multiple base stations (fig. 8, 20A, 20D). Because Ebata discloses optimal quality can be achieved in the communication between a mobile station and a communication destination by efficiently using resources of the entire wireless network (abstract, lines 2-5), it would have been obvious to one skilled in the art at the time of invention to incorporate the multiple base station communications as disclosed by Ebata into the invention of Fujiwara.

11. Claim 5 rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara et al. (U.S. Pub. No. 2003/0165127) and Ebata et al. (U.S. Pub. No. 2002/0173310) as applied to claim 4 above, and further in view of Moreau et al. (U.S. Patent No. 5,913,168).

Claim 5, neither Fujiwara nor Ebata disclose dynamically reusing communication resources between the user equipment the multiple relay stations, however, Moreau discloses dynamically reusing communication resources with the advantage of optimization of the use of the radio spectrum (col. 1, lines 39-44). Because of this advantage, it would be obvious to one skilled in the art at the time of invention to incorporate the dynamic reuse as disclosed by Moreau into the combined invention of Fujiwara and Ebata.

12. Claims 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara et al. (U.S. Pub. No. 2003/0165127) as applied to claim 1 above, and further in view of Naden et al. (U.S. Patent No. 7,184,703).

Claim 7, Fujiwara fails to disclose the second radio interface comprises multiple input multiple output transmissions, however, Naden discloses the use of multiple input multiple output transmissions (col. 16, lines 24-26). Because Naden discloses the use of multiple input multiple output transmissions the channel capacity may be increased (col. 16, lines 24-26), it would have been obvious to one skilled in the art at the time of invention to incorporate the MIMO transmissions as disclosed by Naden into the invention of Fujiwara.

Claim 10, Fujiwara fails to disclose the first radio interface and the second radio interface operate using different categories of communication links, however, Naden discloses the first radio interface and the second radio interface operate using different categories of communication links (see fig. 4 which shows low loss communication links and faded communication links). Because the communication link categories allows for more accurate signal transmission by selecting low loss communication links, it would have been obvious to one skilled in the art at the time of invention to incorporate the communication link categories as disclosed by Naden into the invention of Fujiwara.

13. Claims 8 and 13 rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara et al. (U.S. Pub. No. 2003/0165127) as applied to claims 1 and 12 above, and further in view of Moreau et al. (U.S. Patent No. 5,913,168).

Claims 8, 13, Fujiwara fails to disclose the first radio interface and the second radio interface operate using a common frequency bandwidth, however, Moreau discloses first radio interface and the second radio interface operate using a common frequency bandwidth with the advantage of optimization of the use of the radio spectrum (col. 1, lines 39-44). Because of this advantage, it would be obvious to one skilled in the art at the time of invention to incorporate the dynamic reuse as disclosed by Moreau into the invention of Fujiwara.

14. Claims 19-21, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naden et al. (U.S. Patent No. 7,184,703) as applied to claims 17 and 22 above, and further in view of Fujiwara et al. (U.S. Pub. No. 2003/0165127).

Claims 19, Naden fails to disclose the radio interface communicates a relay station specific pilot signal, however Fujiwara discloses the radio interface communicates a relay station specific pilot signal ([0033], see fig. 8B which shows an example of a relay station specific pilot signal). Fujiwara further discloses that this transmission multi-hop method has the advantage of using a minimum total of the required transmission power values (abstract, line 13). Because Fujiwara discloses this advantage it would have been obvious to one skilled in the art at the time of invention to incorporate the multi-hop transmission method as disclosed by Fujiwara into the invention as disclosed by Naden.

Claim 20, Naden fails to disclose a memory apparatus containing identification information, however, Fujiwara discloses a memory apparatus containing identification information ([0053], lines 6-7). Fujiwara further discloses that this transmission multi-hop method has the advantage of using a minimum total of the required transmission power values (abstract, line 13). Because Fujiwara discloses this advantage it would have been obvious to one skilled in the art at the time of invention to incorporate the multi-hop transmission method as disclosed by Fujiwara into the invention as disclosed by Naden.

Claim 21, Naden fails to disclose the radio interface communicates using time division multiple access, however, Fujiwara discloses the radio interface communicates using

time division multiple access ([0006, line 6). Fujiwara further discloses that this transmission multi-hop method has the advantage of using a minimum total of the required transmission power values (abstract, line 13). Because Fujiwara discloses this advantage it would have been obvious to one skilled in the art at the time of invention to incorporate the multi-hop transmission method as disclosed by Fujiwara into the invention as disclosed by Naden.

Claim 24, Naden fails to disclose the radio interface receives a relay station specific pilot signal and compares the relay station specific pilot signal with an identification signal, however Fujiwara discloses the radio interface receives a relay station specific pilot signal and compares the relay station specific pilot signal with an identification signal ([0033], see fig. 8B which shows an example of a relay station specific pilot signal). Fujiwara further discloses that this transmission multi-hop method has the advantage of using a minimum total of the required transmission power values (abstract, line 13). Because Fujiwara discloses this advantage it would have been obvious to one skilled in the art at the time of invention to incorporate the multi-hop transmission method as disclosed by Fujiwara into the invention as disclosed by Naden.

Claim Rejections - 35 USC § 112

15. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

16. Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine

the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term "multiplexing" in claims 2 and 9 is used by the claim to mean "connecting from one to many", while the accepted meaning is "selecting one of many data sources and outputting that data source into a single channel." The term is indefinite because the specification does not clearly redefine the term. Further the term macroscopic multiplexing as used in claims 2 and 9.

17. Claims 15 and 16 recites the limitation "the relay station" in line 1. Because there is more than one relay station, there is insufficient antecedent basis for this limitation in the claim.

Allowable Subject Matter

18. Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin M. File whose telephone number is (571)272-6040. The examiner can normally be reached on M-F 1:00PM-9:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on (571)272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Erin M. File

EMF

3/3/2007

DAVID C. PAYNE
PRIMARY PATENT EXAMINER